

ALLEGHENY COUNTY
DEPARTMENT OF HUMAN SERVICES
PROPOSAL COVER PAGE

SOLICITATION:

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Proposal Information
DATE SUBMITTED: January 4, 2016
AMOUNT REQUESTED: [REDACTED]
*PROPOSAL ABSTRACT: I am applying for the contract to conduct an impact evaluation of the Predictive Risk Modeling (PRM) tool in Allegheny County General Protective Services. The impact evaluation would complete three aims: (1) To identify the general impacts of the PRM Tool; (2) To assess whether there are disparate impacts of the PRM Tool; and (3) To identify the effectiveness of the PRM Tool in reducing decision-making errors. In the proposal narrative, I detail the analytic techniques I would use to address these aims and provide evidence of my experience and skills using these techniques.

*Please limit your response to 750 characters

Please check each of the following before submitting your Proposal:

☐ My firm is registered with the Allegheny County Department of Minority, Women and Disadvantaged Business Enterprises

*NOTE: This item is not applicable – please see the MWDBE Participation Waiver Request and the Addendum to DBE Waiver Request included with my submission.

☒ By submitting this proposal, I agree that, if offered a contract award, I will comply with the standard County terms and conditions for County contracts.

☒ By submitting this proposal, I agree to comply with DHS Cyber Security, EEOC/Non-Discrimination and HIPAA requirements.

☒ By submitting this proposal, I certify and represent to the County that all submitted materials are true and accurate, and that I have not offered, conferred or agreed to confer any pecuniary benefit or other thing of value for the receipt of special treatment, advantaged information, recipient's decision, opinion, recommendation, vote or any other exercise of discretion concerning this RFP.

IMPACT EVALUATION PROPOSAL

Response to RFP: Evaluation of a Predictive Risk Modeling Tool for Improving the Decisions of Child Welfare Workers

Submitted to: Allegheny County DHS

Submitted by: Sarah Font, PhD, MSW

Executive Summary: Impact Evaluation

The applicant, Dr. Sarah Font, holds a PhD in Social Welfare from the University of Wisconsin at Madison, and has published numerous papers using administrative data from child welfare systems in various peer-reviewed journals: *Child Abuse and Neglect*, *Pediatrics*, *Child Maltreatment*, and *Children & Youth Services Review*. In addition to her work with administrative data, Dr. Font has published numerous other works on aspects of the child welfare system, including decision-making and racial disproportionality. She is well-versed in the statistical methods proposed in this evaluation and is able to complete the evaluation significantly under the maximum budget. Moreover, Dr. Font will begin working as a tenure-track professor at the Pennsylvania State University in 2016; her proximity to Allegheny County will facilitate close collaboration with the existing research team and administrative staff.

The impact evaluation will address three aims, encompassing 5 research questions (RQs):

Aim 1: To identify the general impacts of the PRM tool

RQ1a. How does the rate of screened-in calls change as a result of the PRM tool?

RQ1b. To what extent do the effects of the PRM tool vary across individual screeners?

Aim 2: To assess whether there are disparate impacts of the PRM tool

RQ2. Does use of the PRM tool disproportionately affect the proportion of screened-in referrals that involve a racial or ethnic minority child or a child from a low-income family?

Aim 3: To identify the effectiveness of the PRM tool in reducing decision-making errors

For Aim 3, I will identify whether the PRM tool improves the accuracy of the screening decisions, specifically focusing on false-positive errors (unnecessary screen-ins) and false-negative errors (screen-outs of referrals that warranted assessment). The following research questions will be addressed in Aim 3:

RQ3a. Does the PRM tool decrease the rate of false-positive errors in the screening process?

RQ3b. Does the PRM tool decrease the rate of false-negative errors in the screening process?

The specific analysis plans for each research question is explained in detail in Sections C, D, and E of the Proposal Narrative. The analysis plans address common threats to causal inference common to quasi-experimental studies, including omitted variable bias and non-equivalencies in the comparison group, using techniques such as inverse probability weighting and difference-in-differences estimators.

To conclude, Dr. Font is well-suited to complete this impact evaluation in a reasonable time frame and significantly under budget. As shown in her Curriculum Vitae, she has been extraordinarily efficient in conducting and publishing quality research. The evaluation plan is highly detailed, but is able to be adjusted to meet the needs of Allegheny DHS and the existing research team.

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Section A. Organizational Experience

A.1. Attributes of Primary Investigator

I, the applicant, hold a PhD in Social Welfare from the University of Wisconsin – Madison. I am currently a postdoctoral research fellow at the University of Texas at Austin and will begin a new position as an assistant professor at the Pennsylvania State University (PSU) Department of Sociology and Criminology in August, 2016. At PSU, I will be an affiliate of the Network on Child Protection and Well-Being, with my position co-funded through the Social Science Research Institute. If my proposal is selected for funding, all aspects of the evaluation will be completed by me. Given that I will be changing positions during the evaluation period, I am applying for this contract as an individual rather than through a university.

A.2. Experience and Skills

My skill set is particularly well-suited for evaluating the impact of Predictive Risk Modeling (PRM) on Alleghany County's General Protective Services (GPS). I have extensive experience with the analysis of administrative data, including that from child welfare systems. I have cleaned and analyzed administrative data from the state of Wisconsin, which included data from protective services, foster care, and public benefit systems. This work resulted in four research papers, all of which were published in peer-reviewed journals that are well-respected in the field of child maltreatment (Berger et al., 2015; Font, 2015a, 2015b, 2015c). In addition, I have established a partnership with the Texas Department of Family and Protective Services to use their administrative data to analyze foster care placement patterns. Thus, I am familiar with the process of coordinating with state and local child welfare systems to generate knowledge on important issues. Moreover, my experiences using administrative data have provided me with great insight into its strengths and weaknesses, and how to best use administrative data in research. Furthermore, I am skilled in using the statistical software necessary to complete an impact evaluation: specifically, I am highly proficient in STATA and have training in the use of SAS.

My past research also highlights my relevant skills. One important focus of the proposed impact evaluation will be on how PRM influences decision-making by call screeners. My past work using a national data set has shown that caseworkers consider a range of factors related, some of which are unrelated to risk, when determining whether a case should be substantiated or receive services (Font & Maguire-Jack, 2015; Font & Warren, 2013). These studies used multi-level regression techniques and logistic regression with moderation.

Another focus of the impact evaluation will be on whether, and how, PRM affects racial disproportionalities in screening decisions. My past work has examined the factors associated with disproportionality in child welfare decision-making, included family and child characteristics, caseworker characteristics, and interactions between child and caseworker race (Font, 2013; Font, Berger, & Slack, 2012). These studies used decomposition techniques. Decomposition is a process by which a difference between two groups is broken down (decomposed) to assess how much of the difference is attributable to differences in characteristics (differential risk) versus differences in the treatment of each group (bias).

In addition, some of my past work has sought to identify the effects of specific case decisions in the absence of experimental data. For example, in a recent study (Font, 2014), I used inverse probability weighting (a procedure that adjusts for observable differences between groups) and instrumental variables regression (a procedure that exploits exogenous variation in group assignment) to identify the effects of placement in kinship (versus non-relative) foster care on

child well-being. Additional details about my expertise and prior accomplishments are found in my Curriculum Vitae, which is submitted along with this proposal.

Section B. Overview of Impact Evaluation Plan

B.1. Specific Aims

This evaluation will examine the effects of using a newly-created Predictive Risk Modeling (PRM) tool on screening decisions (whether to assign a referral for assessment or not) for calls handled by General Protective Services via Allegheny County Department of Human Services.

Aim 1: To identify the general impacts of the PRM tool

RQ1a. How does the rate of screened-in calls change as a result of the PRM tool?

RQ1b. To what extent do the effects of the PRM tool vary across individual screeners?

Aim 2: To assess whether there are disparate impacts of the PRM tool

RQ2. Does use of the PRM tool disproportionately affect the proportion of screened-in referrals that involve a racial or ethnic minority child or a child from a low-income family?

Aim 3: To identify the effectiveness of the PRM tool in reducing decision-making errors

For Aim 3, I will identify whether the PRM tool improves the accuracy of the screening decisions, specifically focusing on false-positive errors (unnecessary screen-ins) and false-negative errors (screen-outs of referrals that warranted assessment). The following research questions will be addressed in Aim 3:

RQ3a. Does the PRM tool decrease the rate of false-positive errors in the screening process?

RQ3b. Does the PRM tool decrease the rate of false-negative errors in the screening process?

B.2. Plan for Management of Evaluation Plan

If awarded the contract, my first step would be to arrange a conference call with the existing research team to receive their feedback on the evaluation plan. Although I provide a detailed evaluation plan below, alterations or additions to the proposed analyses can easily be incorporated—my experience with administrative data and broad knowledge of statistical methods allow me to be incredibly flexible in making real-time adjustments to the evaluation plan without incurring additional costs or requiring additional time to complete the evaluation.

Moreover, for the majority of the evaluation period, I will be under the employ of The Pennsylvania State University and residing in the Commonwealth of Pennsylvania. Consequently, collaboration with the existing research team can be done in-person as well as electronically. My proximity to Allegheny County will also allow me to visit the site and gain insights into the day-to-day workings of the GPS system that may help to inform the impact evaluation. I have built two site visits into the budget, but additional visits could be easily arranged.

B.3. Challenges of Evaluation and How They Will Be Addressed

As a single-site study with approximately 11 call screeners, typical approaches to experimental designs are not feasible. That is, randomization can neither occur at the site-level nor the screener-level. Moreover, randomization of referrals (assigning referrals to be screened using the PRM tool or not) would be quite complicated to oversee and ensure fidelity on. Thus, the best option for evaluating the PRM tool is to use a quasi-experimental design.

Demonstrating causal inference (a form of internal validity) is the primary challenge of quasi-experimental designs – that is, to ensure that a given outcome can be attributed to the PRM

tool. In this case, one example of a threat to causal inference would be that some policy change or shift in local economic conditions occurred at the same time as the PRM tool roll-out. In such a case, it would be difficult to prove that any changes to screen-in rates were not attributable to other system changes. Causal inference is particularly difficult if there is no comparison group; thus, among quasi-experimental designs, the best option is a two-group pretest-posttest comparison design. This design has two key elements. First, the given outcome metrics (e.g., screen-in rates) would be assessed before and after implementation of the PRM tool. This provides a baseline for comparison (i.e., how has the screen-in rate changed from before the PRM tool was used?). However, it is possible that other factors, such as changes in the economy, or changes in other child welfare policies, could cause changes in screen-in rates over that time. In a single-group pretest-posttest design, those changes would be misattributed to the PRM tool. Thus, the second key aspect of evaluation will be to identify a comparison group. In this case, the comparison group would ideally consist of neighboring counties with similar population characteristics. Yet, according to the most recent federal Child and Family Services Review, the state of Pennsylvania does not have counties report their GPS case information. Thus, such data would have to be obtained from the counties themselves. It is foreseen that other counties may be willing to share their aggregate GPS statistics (e.g., proportion screened-in by month); however, there is no guarantee they would do so.

In the event such data are unable to be obtained, the next best option is to do a one-group pretest-posttest design with extensive pretest data. That is, by examining long-term trends going back multiple years, I will be able to identify whether any spike or drop in screen-in rates is anomalous in the context of general trends for the county. If the change in screen-in rates following PRM implementation are in fact anomalous, this will increase confidence that the change is attributable to the PRM tool.

There are other limitations and challenges that are more specific to a given research question; consequently, I will discuss those concerns after explaining the details of the analysis plan.

B.4. Assessing the Validity and Strength of Results

In the detailed evaluation plans, I have included power analyses. The purpose of power analyses is to plan how long referrals must be collected post-implementation before I would obtain a sample size sufficient to correctly identify a significant effect. Specifically, I have calculated the sample sizes necessary to constrain the risk of a Type I error (mistaking statistical noise for a true effect) to either 5% ($\alpha=.05$) or 1% ($\alpha=.01$) and to limit the risk of a Type II error (mistaking a true effect for statistical noise) to 20% (power=.8) or 10% (power=.9). The typical standards for Type I and II errors are 5% and 20%, respectively. However, given the importance of this evaluation for future agencies decisions, higher standards may be desirable. The sample size required also depends on the size of effect one wants to be able to detect. Given the expectations around how the PRM tool will affect the outcomes of interest, I focus the power analyses on the sample sizes required to identify relatively small effects.

With regard to the validity of effects, I discuss the issue of causal inference above (Section B.4.). External validity, or the extent to which the results can be generalized to other contexts, cannot be truly assessed in this (or any) proposal for this evaluation. That is, the results of this evaluation are inherently context-specific given that GPS is unique to the Commonwealth of Pennsylvania. In addition, whether the findings can be generalized to other counties would be dependent on the similarity of the populations and GPS systems to Allegheny County. The other consideration for external validity is whether the findings could be generalized to CPS referrals. Although this cannot be tested directly, one way of assessing whether the PRM tool might work

for CPS referrals is to examine whether the PRM tool is equally effective (Aim 3) across different types of allegations or concerns. To do this, I will categorize types of concerns (e.g., parental mental health, material insufficiency) and assess whether the PRM tool has the same rate of effectiveness for each type. More consistent results across multiple types of allegations would suggest that the PRM tool may be promising for assisting with screening decisions in CPS as well.

Section C. Detailed Evaluation Plan for Aim 1

C.1. RQ1a: How did the rate of screened-in calls change as a result of the PRM tool?

The first, and most basic, approach to answering RQ1a will be to calculate the screen-in rate for the months prior to implementation and compare that rate to the post-implementation rate using tests of equal proportions to determine statistical significance. However, the number and composition of referrals to GPS may vary throughout the year due to differential exposure to reporting sources (for example, when children are on summer or winter breaks from school). Thus, to obtain an accurate picture of changes in screen-rates, the evaluation will ideally compare a full 12 months of pre-implementation and 12 months of post-implementation data. Given, however, that DHS would likely desire interim results, I would also provide an interim report at 6 months post-implementation, which would compare the 6 months of post-implementation data (March-August 2016) to the corresponding set of months in the year prior to implementation (March-August 2015).

The 6- and 12-month observation points are consistent with the results of a power analysis (shown in Table 1). Currently, Allegheny County GPS receives approximately 55 calls per day and screens in approximately 46% of its referrals. Based on these figures, Table 1 reports the length of observation (in days) that would be required to detect variously-sized changes in the screen-in rate (delta) using different acceptability thresholds for Type I and II errors. I find that to detect a fairly small change (± 2 percentage points), 6 months to 1 year of observations pre- and post- implementation would be required. Given that neither the direction nor magnitude of the effects of the PRM tool are hypothesized *a priori*, it is reasonable to collect sufficient data to detect even small effects.

Table 1. Power Analysis for Aim 1: RQ1a

Effect Size	At $\alpha=.05$; power=.80		At $\alpha=.01$; power=.90	
	Group sample size	Days pre/post	Group sample size	Days pre/post
+.02	9776	178	18532	337
-.02	9713	177	18412	335
+.05	1568	29	2972	54
-.05	1543	28	2925	53
+.10	784	14	743	14
-.10	758	14	719	13

Note: Power analysis based on a pre-implementation screen-in rate of .46 and an average of 55 calls received per day

There are, however, concerns about the validity of the comparison: that is, for the pretest-posttest design to be appropriate, the PRM tool must be the only difference between the pre- and post-implementation referrals. There are two approaches I will take to account for other potential differences. First, I will use inverse probability weighting (Austin, 2011). This technique first calculates a propensity score, which is equal to the probability of being in the post-implementation (versus pre-implementation) group as a function of observable characteristics (e.g., child age, race, type of allegation, comorbid risk factors). A transformation of the propensity score is then used

to weight the sample in all analyses; when weighted, the groups should then be statistically equivalent on all observable characteristics. This is a technique I have used in prior work (Font, 2014). This technique would account for any changes in the composition of referrals in the

months pre- and post-implementation; it would not, however, account for structural changes that would not vary at the referral level nor would it account for changes in any characteristics that was not measured in the administrative data. Thus, I will also compare the pre-post trends for Allegheny County to trends in screen-in rates for up to 5 other counties who track screen-in rates for GPS. Counties with similar socio-demographic characteristics will be identified using U.S. Census Bureau data. As I will only be requesting the screen-in rates by month (i.e., aggregate, rather than individual-level data) for these other counties, I am reasonably optimistic that I will be successful in obtaining the figures necessary for comparison. If so, the difference estimate for Allegheny County GPS will be compared to a difference estimate for comparison counties.

C.2. RQ1b. To what extent did the direction and magnitude of changes in the screen-in rate vary across individual screeners?

The effect of using the PRM tool could be general (i.e., every screener applies it in the same way) or specific (i.e., whether and how the PRM tool affects the probability of screen-in depends on the screener). To answer this research question, I will examine individual-level variation in the effects of the PRM using multi-level modeling techniques. Multi-level modeling allows for the effect of a given variable on an outcome to vary across the values of a “nesting” variable. In this model, referrals will be “nested” within screeners, meaning each screener will have screened multiple referrals. Thus, the multi-level model will allow for the effect of using the PRM tool on the screen-in decision to vary across screeners (this is called a “random effect”), while controlling for individual characteristics of a given case (e.g., month of referral, type of maltreatment allegation, age and race of alleged victim).

Section D. Detailed Evaluation Plan for Aim 2

D.1. General Approach to Aim 2

Many child welfare agencies are concerned about disproportionality in their decision-making processes. Black and low-income families are disproportionately represented in the child welfare systems of most states and counties. There are numerous possible ways in which the PRM tool could affect disproportionality in screen-in rates across sociodemographic lines, and it is important to ascertain both whether the PRM tool affects disproportionality, and if so, how. If, for example, it were found that the PRM tool increased screen-ins among one sociodemographic group, but decreased or had no effect on screen-ins in another sociodemographic group, there are at least two plausible explanations that would need to be explored: differential risk and differential treatment. Differential risk means that the PRM tool calculated higher average risk scores for families in one sociodemographic group as compared with families in a different sociodemographic group. This could occur if, for example, the PRM tool heavily weights risk factors that may disproportionately apply to specific racial or socioeconomic groups, such as criminal justice involvement or receipt of public benefits, in its risk calculation. Prior research has found that racial and economic disproportionality in child welfare decision-making are primarily explained by racial differences in presenting risk factors (Drake et al., 2011; Drake, Lee, & Jonson-Reid, 2009; Font et al., 2012; Jonson-Reid, Drake, & Kohl, 2009). Thus, if the PRM tool provides information about risk factors that were previously unlikely to be known to screeners, or weights risk factors in a way that a screener would not themselves do intuitively, this could inadvertently impact screen-in disparities.

Alternatively, differential treatment would mean that, given equivalent risk scores, families in one sociodemographic group are more likely to be screened in than families in another group. In addition, the PRM tool could remove subjectivity from the screening process, and thus

disparities (to the extent they were originally attributable to bias) could decrease. The role of the PRM tool in racial and socioeconomic disparities will be examined in detail.

D.2. Specific Analyses for Aim 2

The analyses for Aim 2 will focus on racial/ethnic and socioeconomic subgroups that are sufficient in numbers to identify a within-subgroup change in screen-in rates of .05 or larger. The sample sizes required are the same as those shown in the .05 columns of Table 1; however, the required sample size will take longer to acquire for any individual subgroup. White residents comprise 81% of Allegheny County (U.S. Census Bureau, 2014 estimates) and thus are likely to comprise a majority of GPS referrals; thus, acquiring the necessary sample size for other racial/ethnic groups will likely require at least 1 year of post-implementation data. Similarly, as high-income families tend to be unlikely to be reported to child welfare systems, the income-based analysis may compare only low-income and moderate-income families.

For those groups with an adequate sample size, I will calculate the average screen-in rate in the months leading up to PRM implementation and then for the months following PRM implementation. Race/ethnicity will be measured based on the race of the primary parent. Specific socioeconomic indicators will depend on available data; however, receipt of specific public benefits (e.g., Temporary Assistance to Needy Families [TANF] or the Supplementary Nutrition Assistance Program [SNAP]) are commonly used to identify low-income families in administrative datasets where richer socioeconomic data, such as household income, employment, or education level, are unavailable. I will then compare the pre- and post-implementation rates for each racial group using difference-in-differences analyses. In this method, the magnitude of change (between pre- and post-implementation) in screen-in rates for one sociodemographic group will be compared to that of another group to determine whether, after accounting for sampling error, the magnitude of change in screen-in rates statistically significantly differs between groups. This will assess whether the PRM tool resulted in disproportionate changes in the screen-in rates by race or by socioeconomic status.

To assess the extent to which differences (or lack thereof) in screen-in rates across racial/ethnic and socioeconomic groups post-PRM implementation are reflecting differential risk versus differential treatment, decomposition methods will be used. This method is most commonly used to examine discrimination in labor markets (Blinder, 1973; Oaxaca, 1973), but I have used this method in previous work to examine the prevalence of racially discriminatory decision-making in child protective services (Font, Berger, & Slack, 2012; Font, 2013). In a decomposition model, the total difference in screen-in rates for two groups is decomposed, or broken down, into the “explained” and “unexplained” portions. The “explained” portion identifies the amount of difference in a given outcome that is attributable to differences in the average characteristics of two groups. To simplify, it answers the question, “How much smaller or larger would the gap in screen-in rates be if the two groups were identical on all observed characteristics?” The “unexplained” portion of the difference is that which can be attributed to differences in the effects of characteristics. This latter piece would identify how much different the gap in screen-in rates would be if the effect of the risk score on the probability of screen-in were the same for the groups examined. As there are multiple groups that may be considered in this analysis, the decomposition would simply be repeated for all possible pairs.

Section E. Detailed Evaluation Plan for Aim 3

E.1. Approach and Rationale for Aim 3

Efficient targeting of limited resources is a key strategic goal of protective services systems. Yet, many referrals that are screened-in for initial assessment are found not to require further intervention, and many screened-out referrals involve families who are subsequently re-referred. It is helpful to think of each screening decision as a hypothesis about whether the referred family is at-risk, and some of those hypotheses will be wrong. There are two types of errors that screeners can make. The first type of error is a “false positive”, which occurs when a family that *is not* in need of intervention is screened in. The second type of error is a “false negative”, which occurs when a family that *is* in need of intervention is screened out. The question to be examined here is whether the relative proportion of decisions that turn out to be incorrect decreases as a result of the PRM tool. (Notably, this assumes that decisions about whether or not to further intervene are made correctly, and thus are valid indicators with which to retrospectively determine the accuracy of the screen-in decision; this assumption, at least for CPS decision-making, is questionable; Font & Maguire-Jack, 2015). These errors are typically inversely related, meaning that if the PRM tool decreased false positives, it would potentially come at the cost of an increase in false negatives.

E.2. RQ3a: Does the PRM Tool decrease the rate of false-positive errors in the screening process?

If the PRM tool reduces false-positive errors, the proportion of screened-in cases that require further intervention will significantly increase, because the tool will be helping to screen-in high risk cases and screen-out low-risk cases. (Note: the overall *number* of screened-in cases that require further intervention may or may not increase: this depends on the relative level of efficiency prior to PRM implementation). To test this possibility, I will first compare the proportions of screened-in cases that were closed without further intervention before and after the PRM tool was implemented using tests of equal proportions to determine statistical significance. I will also examine the proportion of screened in cases that end with child removal or other “intensive” interventions. However, as discussed in RQ1a, changes to these rates are not necessarily able to be attributed to the PRM tool without comparing these changes to areas where the PRM tool was not used. Consequently these changes will also be compared to corresponding rate changes in other counties (where available).

Unfortunately, I do not have information about the pre-implementation rate of false-positives that would be necessary to calculate the necessary sample size with precision. However, if 55 calls are received per day, and 54% of those are screened-out, then there are approximately 25 screened-in referrals each day. From here, I can put some boundaries around a likely timeline. In Table 2 (below), I show the sample size necessary to identify a 2 or 5 percentage point

Table 2. Power Analysis for Aim 3: RQ3a					
Baseline false-positive rate	Effect size	<i>At $\alpha=.05$; power=.80</i>		<i>At $\alpha=.01$; power=.90</i>	
		Required sample per group	Days of data per group	Required sample per group	Days of data per group
0.25	-.02	7157	286	13567	543
	-.05	1094	44	2073	83
0.50	-.02	9807	392	18591	744
	-.05	1566	63	2968	119
0.75	-.02	7550	302	14312	572
	-.05	1251	50	2371	95
<i>Note:</i> Days of data per group based on an average of 25 screened-in referrals per day (i.e., pre-implementation total of 55 referrals per day multiplied by 46% screen-in rate)					

decrease in false-positives based on a beginning false-positive rate of either, 25%, 50% or 75%. If the effect of the PRM tool on false-positives is large (at least 5 percentage points), then the analysis could be completed with 4 months of pre- and post-implementation data. To detect smaller effects, one or more years of pre- and post-implementation data will be required.

E.3. RQ3b. Does the PRM Tool decrease the rate of false-negative errors in the screening process?

If the PRM tool reduces “false-negative errors”, the proportion of screened-out referrals that have subsequent contact with GPS or CPS will diminish after PRM implementation. Severity is an important consideration when examining possible screening errors: that is, GPS is likely most concerned with screened-out referrals wherein the alleged victim is subsequently injured, killed, or has to be removed from the home. Hence, I will consider four levels of possible error, for all families with a screened-out GPS referral during the observation period: (1) new screened-out GPS or CPS report; (2) new screened-in GPS or CPS report; (3) new GPS or CPS report that is substantiated or opened for services; and (4) new child injury, death, or out-of-home placement.

For each level of possible error, I will use a technique called survival analysis to examine the risk of a given error being identified within specified intervals following the initial screened-out referral. This is a technique that I have applied in several prior works (Berger et al., 2015; Font, 2015a, 2015c). In survival analysis, time from the initial observation (i.e., the screened-out GPS referral) until an event (e.g., re-referral) is the focus of the analysis. The focus on the timing of an event, rather than whether an event occurred, is an important distinction for this evaluation because it is unclear at what point a subsequent event should no longer be attributed to a screening error in the original referral. For example, if a referred family were screened out and then re-referred a year later, does that suggest that the original screening decision was incorrect, or simply that the circumstances of the family changed since the initial referral? I suggest that screened-out referrals be tracked for up to one year, and that intervals of 3 months be examined to determine whether, and for how long, the rates of possible error remain lower for the group of referrals screened out after PRM-implementation as compared with referrals screened out before PRM-implementation. The reason for this approach is that it is likely that the effects of the PRM Tool on false-negative errors will decrease over time: that is, families screened-out using the PRM Tool may be less likely to be identified as an error using 3 months post-initial referral as a time frame for indicating error,

but, by one-year post-initial referral, there may be no difference. The power analysis in Table 3 indicates the smallest effect size (presented as a hazard ratio) that would be detectable at each 3 month interval, given assumptions about the baseline rate of false-negatives and the standards imposed for Type I and II errors.

<u>Table 3. Power Analysis for Aim 3: RQ3b</u>					
Error Thresholds	Baseline false-negative rate	Smallest detectable hazard ratio by months of pre/post data available			
		<u>3</u>	<u>6</u>	<u>9</u>	<u>12</u>
At $\alpha=.05$; power = .80	5%	0.69	0.77	0.81	0.84
	10%	0.77	0.84	0.87	0.88
	15%	0.81	0.87	0.89	0.90
At $\alpha=.01$; power = .90	5%	0.58	0.69	0.75	0.87
	10%	0.70	0.78	0.82	0.84
	15%	0.75	0.82	0.85	0.78
<i>Note:</i> Smallest detectable size based on assumption of 30 screened-out referrals per day (i.e., pre-implementation n of 55 referrals per day multiplied by 54% screen-out rate)					

Section F. Timeline for Completion of Evaluation

<u>Task</u>	<u>Timing</u>
Coordinate with PRM tool development team and DHS to align rollout of PRM with evaluation plan	Feb.- Mar. 2016
Identify demographically similar counties to use as comparison group	Apr. 2016
Make contact with comparison counties to discuss access to aggregated data on their GPS screen-in rates for March 2015 to March 2017	May 2016
Obtain Allegheny DHS data on GPS cases for 12 months preceding PRM implementation	Will request Mar. 2016
Obtain preliminary data: 6 months post-implementation	Will request Sep. 2016
Provide Allegheny DHS with preliminary report based on 6 months of post-implementation data.	Nov. 2016
Obtain full year of post-implementation Allegheny county data.	Will request Apr. 2017
Obtain data from comparison counties if available	Will request Apr. 2017
Provide Allegheny DHS with final impact evaluation report.	Jul. 2017
Collaborate with DHS and associates to publish results of impact evaluation in peer-reviewed journals.	Jul.-Dec. 2017

Section G. Works Cited

- Austin, P. C. (2011). An introduction to propensity score methods for reducing the effects of confounding in observational studies. *Multivariate Behavioral Research*, 46(3), 399–424. <http://doi.org/10.1080/00273171.2011.568786>
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- Font, S. A., & Maguire-Jack, K. (2015). Decision-making in child protective services: influences at multiple levels of the social ecology. *Child Abuse & Neglect*, (49), 50–62.
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- Jonson-Reid, M., Drake, B., & Kohl, P. L. (2009). Is the overrepresentation of the poor in child welfare caseloads due to bias or need? *Children and Youth Services Review*, 31, 422–427.
- Oaxaca, R. (1973). Male-Female Wage Differentials in Urban Labor Markets. *International Economic Review*, 14(3), 693–709. <http://doi.org/10.2307/2525981>

Section H1. Proposed Budget

PERSONNEL COSTS									
NAME	LOCATION	TIME	BASE SALARY	BASE MONTHS	EFFORT-MONTHS ALLOCATED	% EFFORT (YEAR)	SALARY COSTS	FRINGE	TOTAL
Font	University of Texas at Austin	Mar/2016 - Jul/2016	\$45,000	12	1	8.3%	\$3,735	\$0	\$3,735
Font	Pennsylvania State University	Aug/2016 - Dec/2017	\$80,006	9	4	33.3%	\$ 35,558	\$ 13,477	\$49,035
TRAVEL COSTS									
NAME	LOCATION	TIME	DESTINATION	TRIPS	PURPOSE	MEANS	COST TYPE	COST PER TRIP	TOTAL
Font	Pennsylvania State University	Aug/2016 - Dec/2017	Allegheny County DHS, PA	2	Consultation	Personal vehicle	Fuel, Meals	\$100	\$200
COMPLETE COST OF IMPACT EVALUATION									
\$52,969.79									

Section H2. Budget Narrative

The proposed budget consists of two costs: salary costs for personnel and travel costs. I am the sole personnel on this proposal. My salary costs are put in two columns because my base salary will change partway through the evaluation timeline as I transition from a research fellow position at the University of Texas at Austin to an assistant professor position at the Pennsylvania State University. As the implementation of the Predictive Risk Modeling (PRM) tool will be just getting underway during my remaining time at the University of Texas at Austin, I only allot 1 month of effort towards the project during that time. Once the PRM tool is being used and data are coming available, my effort toward the project will increase substantially, to an estimated 4 months of effort between August of 2016 and December of 2017.

I built in two trips from State College, PA to Allegheny County DHS during the course of the evaluation to account for any situations in which in-person meetings would be necessary to coordinate or discuss details of the evaluation plan. These were estimated to cost \$100 per trip to cover fuel and meals.

A note with regard to the financial audit: As I am applying as an individual contractor and not an organization, I am not able to provide a financial audit.

Section I. References

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Proposed Budget

PERSONNEL COSTS

NAME	LOCATION	TIME	BASE SALARY	BASE MONTHS	EFFORT-MONTHS ALLOCATED
Font	University of Texas at Austin	Mar/2016 - Jul/2016	\$ [REDACTED]	12	1
Font	Pennsylvania State University	Aug/2016 - Dec/2017	\$ [REDACTED]	9	4

TRAVEL COSTS

NAME	LOCATION	TIME	DESTINATION	TRIPS	PURPOSE
Font	Pennsylvania State University	Aug/2016 - Dec/2017	Allegheney County DHS, PA	2	Consultation

COMPLETE COST OF IMPACT EVALUATION

\$52,969.79

% EFFORT (YEAR)	SALARY COSTS	FRINGE	TOTAL
8.3%	\$ [REDACTED]	\$ -	[REDACTED]
33.3%	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]

MEANS	COST TYPE	COST PER TRIP	TOTAL
Personal vehicle	Fuel, Meals	[REDACTED]	[REDACTED]

Sarah A. Font

University of Texas at Austin
1 University Station A2702
Austin, TX 78712
sfont@prc.utexas.edu
(608)-239-9680

Education

<i>Degree</i>	<i>Year Granted</i>	<i>Institution</i>
Ph.D. in Social Welfare	2014	University of Wisconsin-Madison
Master of Social Work	2008	Western Michigan University
Bachelor of Social Work	2007	Western Michigan University

Employment and Experience

<i>Position</i>	<i>Years</i>	<i>Institution</i>
Assistant Professor	Begins Aug. 2016	Pennsylvania State University Department of Sociology and Criminology
NICHD T-32 Postdoctoral Fellow	2014-2016	University of Texas at Austin Population Research Center
Project Assistant	2010-2014	University of Wisconsin-Madison Institute for Research on Poverty
Instructor (Course: Statistics)	2012-2013	University of Wisconsin – Madison School of Social Work
Child Protective Services Specialist	2008-2010	Department of Human Services Kalamazoo County, State of Michigan

Refereed Journal Publications

Gershoff, E. T., & **Font, S. A.** (in press). Corporal punishment in U.S. schools. *Social Policy Report* [Anticipated release date: Feb. 2016].

Font, S. A., & Maguire-Jack, K. (2015). Decision-making in child protective services: Influences at multiple levels of the social ecology. *Child Abuse & Neglect*, 47(September), 70-82.

Font, S. A. (2015). Is higher placement stability in kinship care by virtue or design? *Child Abuse & Neglect*, 42(April), 99-111.

Font, S. A. (in press). Child protection investigations in out-of-home care: Perpetrators, victims and contexts. *Child Maltreatment*.

- Maguire-Jack, K., & **Font, S. A.** (in press). Intersections of individual and neighborhood disadvantage: Implications for child maltreatment. *Children & Youth Services Review*.
- Font, S. A.**, & Berger, L. M. (2015). Child maltreatment and children's developmental trajectories in early to middle childhood. *Child Development* 86(2), 536-556.
- Font, S. A.** & Maguire-Jack, K. (in press). Pathways from childhood abuse and other adversities to adult health risks: The role of adult socioeconomic conditions. *Child Abuse & Neglect*.
- Font, S. A.** (2015). Are children safer with kin? A comparison of maltreatment risk in out-of-home care. *Children & Youth Services Review*, 54, 20-29.
- Berger, L. M. & **Font, S. A.** (2015). The role of families in children's health. *Future of Children*, 25(1), 155-176.
- Berger, L. M., Collins, J. M., **Font, S. A.**, Gjertson, L., Slack, K., & Smeeding, T. (2015) Home foreclosure and child protective services involvement. *Pediatrics*, 136(2) 299-307.
- Warren, E. J., & **Font, S. A.** (2015). Housing insecurity, maternal stress, and child maltreatment: An application of family stress theory. *Social Service Review*, 89(1), 9-39.
- Font, S. A.** (2014). Kinship and nonrelative foster care: The effect of placement type on child well-being. *Child Development*, 85(5), 2074-2090.
- Maguire-Jack, K. & **Font, S. A.** (2014). Predicting recurrent maltreatment among high-risk families: Applying the decision-making ecology framework. *Children and Youth Services Review*, 43, 29-39.
- Font, S. A.** (2013). Service referral patterns among black and white families involved with child protective services. *Public Child Welfare*, 7(4), 370-391.
- Font, S. A.**, & Maguire-Jack, K. (2013). Academic engagement and performance: Estimating the impact of out-of-home care for maltreated children. *Children & Youth Services Review*, 35, 856-864.
- Font, S. A.**, & Warren, E. J. (2013). Inadequate housing and the child protection system response. *Children & Youth Services Review*, 35(11), 1809-1815.
- Font, S.** (2013). Perceptions of juvenile sexual abuse victims: A meta-analysis on vignette-based studies on the effects of victims' age and respondents' gender. *Journal of Child Sexual Abuse*, 22(5), 1-19.
- Font, S. A.** (2012). Burnout in child welfare: Examining the role of employment characteristics and workplace opportunities. *Social Service Review*, 86(4), 636-659.
- Font, S. A.**, Berger, L. M., & Slack, K. S. (2012). Examining racial disproportionality in child protective services case decisions. *Children & Youth Services Review*, 34(11), 2188-2200.

Unrau, Y.A., **Font, S.A.**, & Rawls, G. (2012). Readiness for college engagement among students who have aged out of foster care. *Children & Youth Services Review*, 34(1), 76-83.

Unrau, Y.A., **Font, S.**, & Murphy, S. (2011). Placement moves of foster children as perceived by foster parents residing in urban and semi-urban communities. *Journal of Public Child Welfare*, 5(4), 390-407.

Papers Under Review or In Revision

Berger, L. M., **Font, S. A.**, Slack, K. S., & Waldfogel, J. Income and child maltreatment: Evidence from the EITC. [In revision for *Review of Economics of the Household*].

Font, S. A. & Gershoff, E. T. Contextual factors associated with the use of corporal Punishment in U.S. schools [Under 1st review].

Font, S. A., Gershoff, E. T., Taylor, C. A., Garza, A. B., Olson-Dorff, D., Foster, R. H., Terreros, A., Nielson-Parker, M., & Spector, L. Staff responses to parents hitting children in a hospital setting.

Papers in Progress

Font, S. A., Pettit, K., & Ansari, A. Parenting quality and the social-emotional development of at-risk children.

Font, S. A. Effects of state foster care licensure regimes on foster placement settings and outcomes.

Font, S. A. & Kolivoski, K. Origins of delinquent behavior among youth involved with child protective services: An extension of Social Bonding and Social Learning Theories.

Gershoff, E. T., **Font, S. A.**, Taylor, C. A., Foster, R. H., Garza, A. B., & Olson-Dorff, D. Hospital staff attitudes about spanking.

Other Publications

Font, S. A. (forthcoming). Psychological, economic, and physical health consequences of child maltreatment. In L. Dixon, D. Perkins, L. A. Craig, and C. Hamilton-Giachritsis (Eds.), *What works in child protection: An evidence-based approach to assessment and intervention in care proceedings*. Wiley-Blackwell.

Font, S., Hutchinson, S., & Kline, C. (2008). Student Workbook to Accompany Research Methods for BSW Students by Grinnell, Williams, and Unrau (7th ed). Kalamazoo, MI: Pair Bond Publications.

Awards and Funding Received

2014	Postdoctoral training fellowship NICHD, Training Program in Population Studies
------	---

- Awarded to University of Texas at Austin Population Research Center
- 2014 Honorable mention—Outstanding Social Work Doctoral Dissertation
Society for Social Work and Research
- 2013 Population Health Dissertation Grant
Robert Wood Johnson Foundation Health and Society Scholars Program
- 2013 Irving Piliavin Award
University of Wisconsin – Madison, School of Social Work
- 2012 Doctoral Student Research Paper Award
University of Wisconsin – Madison, School of Social Work

Conference Presentations

Jan. 2015: Society for Social Work and Research Annual Conference, New Orleans, LA

Font, S. A. “Are Children Safer with Kin? A Comparison of Maltreatment Risk in Out-of-Home Care.”

Font, S. A. & Maguire-Jack, K. “Decision-Making in Child Protective Services: Influences at Multiple Levels of the Social Ecology.”

Warren, E. & Font, S. A. “Effects of Housing Assistance on Child Maltreatment Risk: Evidence from Fragile Families.”

Warren, E. & Font, S. A. “Housing Insecurity, Maternal Stress, and Child Maltreatment: An Application of Family Stress Theory.”

Nov. 2014: Association for Public Policy and Management Fall Conference, Albuquerque, NM

Font, S. A. “Are Children Safer with Kin? A Comparison of Maltreatment Risk in Out-of-Home Care.”

Jan. 2014: Society for Social Work and Research Annual Conference, San Antonio, TX

Font, S. A. “Kinship Care or Non-Relative Foster Care? Estimating the Effects of Placement Type on Child Achievement and Behavior.”

Nov. 2013: Association for Public Policy and Management Fall Conference, Washington DC

Berger, L. M., Font, S. A., Slack, K. S., & Waldfogel, J. “Income and Child Maltreatment: Evidence from the EITC.”

Jan. 2013: Society for Social Work and Research Annual Conference, San Diego, CA

Font, S. A. “Service Referral Patterns among Black and White Families Involved with Child Protective Services.”

Nov. 2012: Association for Public Policy and Management Fall Conference, Baltimore, MD

Font, S. A., Berger, L. M., & Slack, K. S. “Examining Racial Disproportionality in Child Protective Services Case Decisions.”

COUNTY OF ALLEGHENY
M/W/DBE PARTICIPATION WAIVER REQUEST


PROVIDER	Sarah Font
ADDRESS	1 University Station A2702 Austin TX 78712
CONTACT PERSON	Sarah Font
TELEPHONE NUMBER	(608)-239-9680
EMAIL ADDRESS	sfont@prc.utexas.edu
FISCAL YEAR/PERIOD	2015

In all instances a good faith effort must be made to meet the M/W/DBE contract goals as outlined in Section 3.10.8.8 of the "Minority and Women Business Enterprise Utilization Affirmative Action Requirements" document.

If you plan to perform the entire contract without using M/W/DBE subcontractors and/or suppliers or have not completely met the M/W/DBE goal of 13% MBE 2% WBE, the following must be attached and submitted with this form:

- * A detailed explanation of your normal business practice
- * Operation and/or Inventory Profile
- * An active company supplier/subcontractor diversity policy
- * Explanation as to why M/W/DBE participation waiver is being requested

Note: The fully completed M/W/DBE Participation Statement must accompany this waiver request, that shows your "Good Faith Effort"

Prepared By: Sarah Font Title: Research Fellow Date: 12-22-2015 Signature: 

**COUNTY OF ALLEGHENY
M/W/DBE PARTICIPATION WAIVER REQUEST**

PROVIDER	Sarah Font
ADDRESS	1 University Station Austin TX 78712
CONTACT PERSON	Sarah Font
TELEPHONE NUMBER	(608)-239-9680
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- * Explanation as to why M/W/DBE participation waiver is being requested

Note: The fully completed M/W/DBE Participation Statement must accompany this waiver request, that shows your "Good Faith Effort"

Prepared By: Sarah Font Title: Research Fellow Date: 12-22-2015 Signature: Sarah Font

Addendum to M/W/DBE Waiver Request

I am requesting waiver for this requirement because, if I were to receive the contract, I would fulfill the contract in its entirety without subcontractors. The completion of the proposed impact evaluation does not require subcontractors. I again clarify that, although I am currently in the employ of the University of Texas at Austin and will be in the employ of the Pennsylvania State University beginning in August 2016, I am applying for this contract as an individual/sole provider to avoid complications in the application process due to the timing of the proposal deadline and the contract period. Hence, as I am not a business or organization, and propose to complete the project without subcontractors, it is not possible to complete the M/W/DBE Participation Statement requirements.

Allegheny County

Vendor Creation Form

Controller's use only:

Supplier No. _____

1099 Eligibility: ☐ Yes ☐ No

☒ Add ☐ Change Supplier No. _____

Company Information:

Federal Tax ID (TIN)

Sarah Font (Independent contractor)

372-08-7165

Company Name (Please type or print)

Original W-9 must be attached

Required information
Type of Service Provided

- | | |
|--|-------------------------------------|
| <input checked="" type="checkbox"/> Independent Contractor | <input type="checkbox"/> Rent |
| <input type="checkbox"/> Maintenance/Service Agreement | <input type="checkbox"/> Care Giver |
| <input type="checkbox"/> Insurance | <input type="checkbox"/> Legal |
| <input type="checkbox"/> Personal Reimbursement | <input type="checkbox"/> Medical |
| <input type="checkbox"/> Other (please list) | |

Type of Commodity Provided

(please describe below)

Research (Impact evaluation)

Required Information

Minority Or Women Owned

☒ Yes ☐ No

Note from applicant: Individual contractor, not technically a "business".

- | | |
|-------------------------------------|-----------------------------|
| <input type="checkbox"/> | Asian Pacific American |
| <input type="checkbox"/> | Black American |
| <input type="checkbox"/> | Hispanic American |
| <input type="checkbox"/> | Native American |
| <input type="checkbox"/> | Subcontinent Asian American |
| <input checked="" type="checkbox"/> | Non-Minority Woman |
| <input type="checkbox"/> | Other |

If Yes ☐ Male ☒ Female

Certified By: ☐ PAUCP ☐ PADGS ☒ Non PA Certification

(attach copy of certification)

Non-Profits including Faith Based Organizations

- | |
|--|
| <input type="checkbox"/> Faith Based Non-Minority |
| <input type="checkbox"/> Faith Based Minority |
| <input type="checkbox"/> African American Non-Profit |
| <input type="checkbox"/> Other Non-Profit |

Outreach Manager Interface ☐ Yes ☒ No

Industry Classification by NAICS CodePrimary Industry 8141

Secondary Industry (if applicable) _____

*If code is not known go to <http://www.census.gov/epcd/naics02/naicod02.htm> and select the correct code.

Required Information

Supplier/Remit To Information (Search Type "V") – (Where check will be mailed for payment. Check must be made payable to exact name listed under TIN provided or check cannot be processed.)

Please print or type

Supplier/Payee Name	Sarah Font		
Address Line 1	University of Texas at Austin		
Address Line 2	1 University Station A2702		
Address Line 3			
City	Austin	State	TX
ZIP Code	78712		
Telephone Number	(608)-239-9680		
Fax Number			

*If the "remit to" information provided on form does not match invoices submitted for payment, the Controller's Office MUST contact supplier to verify address information before payments are processed. Thank you for your cooperation.

If the Allegheny County Department with which you do business is known, providing the information below will help in the processing of your payments. **Failure to include the information may result in processing delays.**

Allegheny County**Departmental Contact**

Name	_____
Telephone No.	_____
Fax No.	412-350-3414
E-Mail Address:	@AlleghenyCounty.us

Supplier/Payee Contact Name

Name	Sarah Font
Telephone No.	(608)-239-9680
Fax No.	(512)-475-7571
Email Address:	sfont@prc.utexas.edu

Request for Taxpayer Identification Number and Certification

Give form to the
requester. Do not
send to the IRS.

Print or type
See Specific Instructions on page 2.

Name (as shown on your income tax return)

Sarah Font

Business name, if different from above

Check appropriate box: ☒ Individual/Sole proprietor ☐ Corporation ☐ Partnership
☐ Limited liability company. Enter the tax classification (D=disregarded entity, C=corporation, P=partnership) ▶
☐ Other (see Instructions) ▶

☐ Exempt
payee

Address (number, street, and apt. or suite no.)

603 E Oltorf St.

City, state, and ZIP code

Austin, TX 78704

Requester's name and address (optional)

List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on Line 1 to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Social security number

or

Employer identification number

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Part II Certification

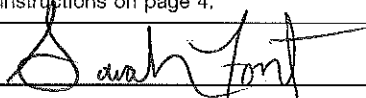
Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
3. I am a U.S. citizen or other U.S. person (defined below).

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the Certification, but you must provide your correct TIN. See the instructions on page 4.

Sign
Here

Signature of
U.S. person ▶



Date ▶

12-22-2015

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

Note. If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

The person who gives Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States is in the following cases:

- The U.S. owner of a disregarded entity and not the entity,

- The U.S. grantor or other owner of a grantor trust and not the trust, and
- The U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person, do not use Form W-9. Instead, use the appropriate Form W-8 (see Publication 515, Withholding of Tax on Nonresident Aliens and Foreign Entities).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items:

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity not subject to backup withholding, give the requester the appropriate completed Form W-8.

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 28% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the Part II instructions on page 3 for details),
3. The IRS tells the requester that you furnished an incorrect TIN,

4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or

5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See the instructions below and the separate Instructions for the Requester of Form W-9.

Also see *Special rules for partnerships* on page 1.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Name

If you are an individual, you must generally enter the name shown on your income tax return. However, if you have changed your last name, for instance, due to marriage without informing the Social Security Administration of the name change, enter your first name, the last name shown on your social security card, and your new last name.

If the account is in joint names, list first, and then circle, the name of the person or entity whose number you entered in Part I of the form.

Sole proprietor. Enter your individual name as shown on your income tax return on the "Name" line. You may enter your business, trade, or "doing business as (DBA)" name on the "Business name" line.

Limited liability company (LLC). Check the "Limited liability company" box only and enter the appropriate code for the tax classification ("D" for disregarded entity, "C" for corporation, "P" for partnership) in the space provided.

For a single-member LLC (including a foreign LLC with a domestic owner) that is disregarded as an entity separate from its owner under Regulations section 301.7701-3, enter the owner's name on the "Name" line. Enter the LLC's name on the "Business name" line.

For an LLC classified as a partnership or a corporation, enter the LLC's name on the "Name" line and any business, trade, or DBA name on the "Business name" line.

Other entities. Enter your business name as shown on required federal tax documents on the "Name" line. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on the "Business name" line.

Note. You are requested to check the appropriate box for your status (individual/sole proprietor, corporation, etc.).

Exempt Payee

If you are exempt from backup withholding, enter your name as described above and check the appropriate box for your status, then check the "Exempt payee" box in the line following the business name, sign and date the form.

Generally, individuals (including sole proprietors) are not exempt from backup withholding. Corporations are exempt from backup withholding for certain payments, such as interest and dividends.

Note. If you are exempt from backup withholding, you should still complete this form to avoid possible erroneous backup withholding.

The following payees are exempt from backup withholding:

1. An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2),

2. The United States or any of its agencies or instrumentalities,

3. A state, the District of Columbia, a possession of the United States, or any of their political subdivisions or instrumentalities,

4. A foreign government or any of its political subdivisions, agencies, or instrumentalities, or

5. An international organization or any of its agencies or instrumentalities.

Other payees that may be exempt from backup withholding include:

6. A corporation,

7. A foreign central bank of issue,

8. A dealer in securities or commodities required to register in the United States, the District of Columbia, or a possession of the United States,

9. A futures commission merchant registered with the Commodity Futures Trading Commission,

10. A real estate investment trust,

11. An entity registered at all times during the tax year under the Investment Company Act of 1940,

12. A common trust fund operated by a bank under section 584(a),

13. A financial institution,

14. A middleman known in the investment community as a nominee or custodian, or

15. A trust exempt from tax under section 664 or described in section 4947.

The chart below shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 15.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 9
Broker transactions	Exempt payees 1 through 13. Also, a person registered under the Investment Advisers Act of 1940 who regularly acts as a broker
Barter exchange transactions and patronage dividends	Exempt payees 1 through 5
Payments over \$600 required to be reported and direct sales over \$5,000 ¹	Generally, exempt payees 1 through 7

¹ See Form 1099-MISC, Miscellaneous Income, and its instructions.

² However, the following payments made to a corporation (including gross proceeds paid to an attorney under section 6045(f), even if the attorney is a corporation) and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, and payments for services paid by a federal executive agency.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are a single-member LLC that is disregarded as an entity separate from its owner (see *Limited liability company (LLC)* on page 2), enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note. See the chart on page 4 for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local Social Security Administration office or get this form online at www.ssa.gov. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at www.irs.gov/businesses and clicking on Employer Identification Number (EIN) under Starting a Business. You can get Forms W-7 and SS-4 from the IRS by visiting www.irs.gov or by calling 1-800-TAX-FORM (1-800-829-3676).

If you are asked to complete Form W-9 but do not have a TIN, write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note. Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

Caution: A disregarded domestic entity that has a foreign owner must use the appropriate Form W-8.

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if items 1, 4, and 5 below indicate otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). Exempt payees, see *Exempt Payee* on page 2.

Signature requirements. Complete the certification as indicated in 1 through 5 below.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account)	The actual owner of the account or, if combined funds, the first individual on the account ¹
3. Custodian account of a minor (Uniform Gift to Minors Act)	The minor ²
4. a. The usual revocable savings trust (grantor is also trustee)	The grantor-trustee ³
b. So-called trust account that is not a legal or valid trust under state law	The actual owner ³
5. Sole proprietorship or disregarded entity owned by an individual	The owner ⁴
For this type of account:	Give name and EIN of:
6. Disregarded entity not owned by an individual	The owner
7. A valid trust, estate, or pension trust	Legal entity ⁴
8. Corporate or LLC electing corporate status on Form 8832	The corporation
9. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
10. Partnership or multi-member LLC	The partnership
11. A broker or registered nominee	The broker or nominee
12. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity

¹ List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

² Circle the minor's name and furnish the minor's SSN.

³ You must show your individual name and you may also enter your business or "DBA" name on the second name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

⁴ List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships* on page 1.

Note. If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Secure Your Tax Records from Identity Theft

Identity theft occurs when someone uses your personal information such as your name, social security number (SSN), or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

Call the IRS at 1-800-829-1040 if you think your identity has been used inappropriately for tax purposes.

Victims of identity theft who are experiencing economic harm or a system problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

Protect yourself from suspicious emails or phishing schemes.

Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to phishing@irs.gov. You may also report misuse of the IRS name, logo, or other IRS personal property to the Treasury Inspector General for Tax Administration at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at: spam@uce.gov or contact them at www.consumer.gov/idtheft or 1-877-IDTHEFT(438-4338).

Visit the IRS website at www.irs.gov to learn more about identity theft and how to reduce your risk.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons who must file information returns with the IRS to report interest, dividends, and certain other income paid to you, mortgage interest you paid, the acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA, or Archer MSA or HSA. The IRS uses the numbers for identification purposes and to help verify the accuracy of your tax return. The IRS may also provide this information to the Department of Justice for civil and criminal litigation, and to cities, states, the District of Columbia, and U.S. possessions to carry out their tax laws. We may also disclose this information to other countries under a tax treaty, to federal and state agencies to enforce federal nontax criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism.

You must provide your TIN whether or not you are required to file a tax return. Payers must generally withhold 28% of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to a payer. Certain penalties may also apply.